RTO 2 – Migration from Virtual Infrastructure to Private Cloud Model

Background/Problem:

In 2008, FRTIB initiated the Thrift Savings Plan (TSP) IT Modernization project to implement considerable changes to the IT infrastructure supporting the FRTIB and TSP. The objectives of the TSP IT Modernization project were four-fold: 1) to move away from its old practice of acquiring and dedicating physical servers to individual application components, 2) to decrease wasted resources through consolidation, 3) improve its disaster recovery capability in both Recovery Time Objective (RTO) and Recovery Point Objective (RPO), and 4) eliminate single points of failure through redundancy.

To achieve these objectives for the distributed systems (Windows and Unix/Linux), the Infrastructure and Operations Management Division (IOMD) built two Virtual Infrastructures, one at the primary data center in Northern Virginia and one at the backup data center in Western Pennsylvania. The Virtual Infrastructures are based on IBM's BladeCenter H blades, EMC's Symmetrix DMX-4 storage systems, EMC's RecoverPoint replication technology, VMWare's vSphere 4 virtualization technologies, and utilizing VMWare's Site Recovery Manager. For connectivity, the Virtual Infrastructure is connected to separate physical network (switches, firewalls, routers, etc) and physical Fibre Channel fabric directors.

In order to provide security for FRTIB's sensitive workloads, the Virtual Infrastructure has been built to provide segregation of resource pools based on whether the workload is: internal vs. external, production vs. non-production, and TSP Recordkeeping systems vs. back office systems.

To support the server migration effort, IOMD built and maintained "gold images" of various templates (combinations of operating system versions, application server platforms, and database management system platforms) that could be cloned to instantiate a new virtual machine. All application components (application servers, databases, etc) were then re-built on newly provisioned virtual machines utilizing the templates. In order to reduce complexity associated with the migration, IOMD decided to not to re-architect existing network architecture for any application.

Current Process/Environment

The current Virtual Infrastructure is composed of 84 IBM BladeCenter HS21 blades, 42 at each of the primary and backup data centers. These blades are allocated between six ESX clusters (PROD-DMZ, PROD-INT, NONPROD-DMZ, NONPROD-INT, BO-DMZ, and BO-INT) at each data center. Storage and network access are statically allocated to the cluster and made available to the cluster members. Production storage is replicated to the backup data center. Only the primary data center clusters process active workloads, while the backup data center clusters are idle.

New services (compute, network, storage) are requested through a change management process. Upon analysis and approval, manual efforts are undertaken to:

- clone templates to virtual machines;
- configure allocate virtual storage from data stores;
- create additional data stores, if required;
- create firewall rules;
- join servers to Windows domain, if required;

- install any application or database platform software; and
- apply any required updates not in the template.

The typical provisioning time for batches (3-7 at a time) of new servers is approximately 2 weeks from approval to delivery and consumes approximately 100 hours of blended effort.

Assumptions:

For the purposes of this RTO, proposals are to assume that:

- FRTIB will select from the options provided by the Offeror and FRTIB will acquire any hardware and software associated with the chosen option.
- FRTIB has budgeted for required hardware and software components and believes the funding is sufficient.
- The new augmentation is to be added into the production distributed environment within the Data Center. Offerors should assume that the new augmentation would consist of adding only compute racks and the associated infrastructure (high speed interconnect and management network) in order to link into the existing distributed environment.
- The software stack to be installed on the new addition to the distributed environment would be a similar as possible to the existing software stack.
- The FRTIB would make all facilities modifications, but the Offeror would detail requirements for facility modifications, coordinate any facility modifications and support these facility modifications. No costs for facilities modifications should be included in this RTO.
- Assume that all labor associated with this RTO must be covered under this task order.

Period of Performance:

The period of performance for this Scenario is for 1 year. The Offeror must use the following dates for the period of performance for this Scenario: October 1st, 2013 through September 30th, 2014.

Proposal Requirements

FRTIB would like to add the following objectives for its distributed environment for the distributed computing environment:

1. Enabling on-demand self-service for authorized users to provision computing capabilities (network, compute, storage) automatically without human intervention from a catalog of standard services;
2. Enabling semi-rapid elasticity of underlying physical computing resources (network, compute, storage);
3. Enabling metering of service usage;
4. Enabling improved monitoring of resource utilization and workload management;
5. Enabling the ability to operate active workloads at each data center, while ensuring the ability to recover the workload according to current RTO/RPO levels; and
6. Enabling the ability to move workloads between data centers while maintaining segregation requirements.

The Offeror shall provide:

- options for and a recommendation of a suitable candidate COTS package;
- a proposed service design package for approval by FRTIB; and
- a proposed service transition package, which transitions all users from the existing Virtual Infrastructure to the new solution.

For this RTO, the Offeror shall outline a full project, addressing cost, schedule, and resources. The Offeror shall present their complete process and approach, including both technical and management and shall provide the necessary communications plan, risk management plan, and support required from the Government staff or other FRTIB support contractors.

The Offeror shall address assumptions, underlying rationale, and quantified efficiencies.

Required Contractor Resources:

The contractor shall be responsible for all work associated with the implementation and integration of the new components into the distributed environment as described in the SOW.

Location:

All work will be performed at the primary and backup data centers.

Labor Category	Labor Category Description	FTE	Labor Hours